SHARP Service Manual

Cassette Tape Recorder
with Built-in Radio

MODEL
GF-1704H
GF-1704E

"In the interests of user-safety the set should be restored to its original condition and only parts identical to those specified be used."

SPECIFICATIONS

GENERAL

Type:	Portable monophonic cassette tape recorder with MW/LW/FM band radio
Power source:	a.c. 110/220V, 50/60Hz (GF-1704H) A.C. 240 Volt, 50/60Hz (GF-1704E) d.c. 6V (four UM/SUM-1 batteries) (GF-1704H) D.C. 6V (four HP-2) (GF-1704E)
Speaker:	4" (10 cm) P.D.S., 8 ohms impedance
Output power:	RMS 1,500 mW (DIN 45 324, DC operation) (GF-1704H) Maximum 2,000 mW RMS 1,500 mW (10% Distortion) (GF-1704E)
Semiconductors:	18-Transistor 14-Diode 1-LED
Dimensions:	Width: 296 mm (11-21/32") Depth: 93 mm (3-21/32") Height: 201 mm (7-29/32")
Weight:	2.8 Kg (6.2 lbs.) (without batteries)
Input terminals:	Microphone jack Record/Playback socket (5 pin, DIN)
Output terminals:	External speaker jack (8 ohms impedance)
Other terminals:	Start/Stop remote control jack Mains power supply socket

TAPE RECORDER SECTION

Type:	Half track monophonic cassette tape recorder
Tape:	Philips type compact cassette tape
Tape speed:	4.8 cm/sec (1-7/8 ips)
Frequency response:	80 – 10,000 Hz
Recording system:	DC bias
Erasing system:	DC magnetic
Fast forward time:	120 sec. (C-60 tape)
Rewind time:	120 sec. (C-60 tape)
Wow and flutter:	0.25% WRMS
Signal to noise ratio:	38 dB

RADIO SECTION

Frequency range:	LW 150 ~ 285 kHz MW 520 ~ 1,620 kHz FM 87.6 ~ 108 MHz
Intermediate frequency:	LW/MW 455 kHz FM 10.7 MHz

SHARP CORPORATION OSAKA, JAPAN

PARTS IDENTIFICATION

(Refer to Figure 1 and Figure 2)

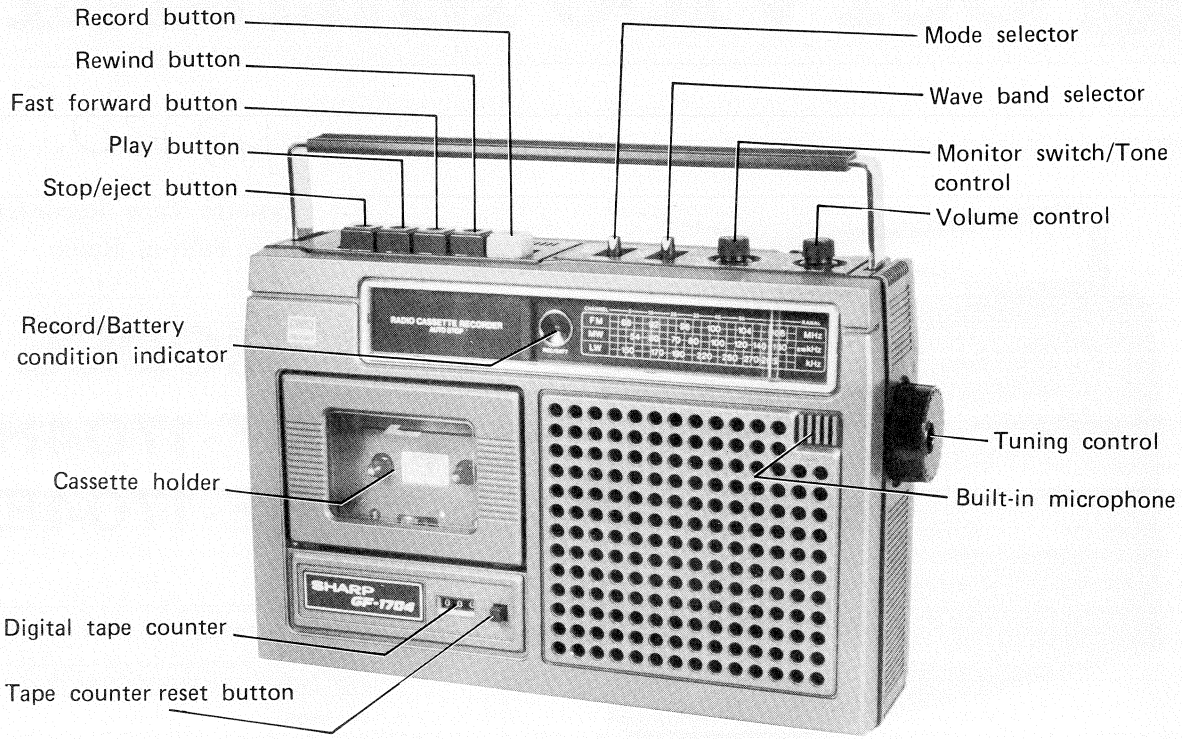


Figure 1

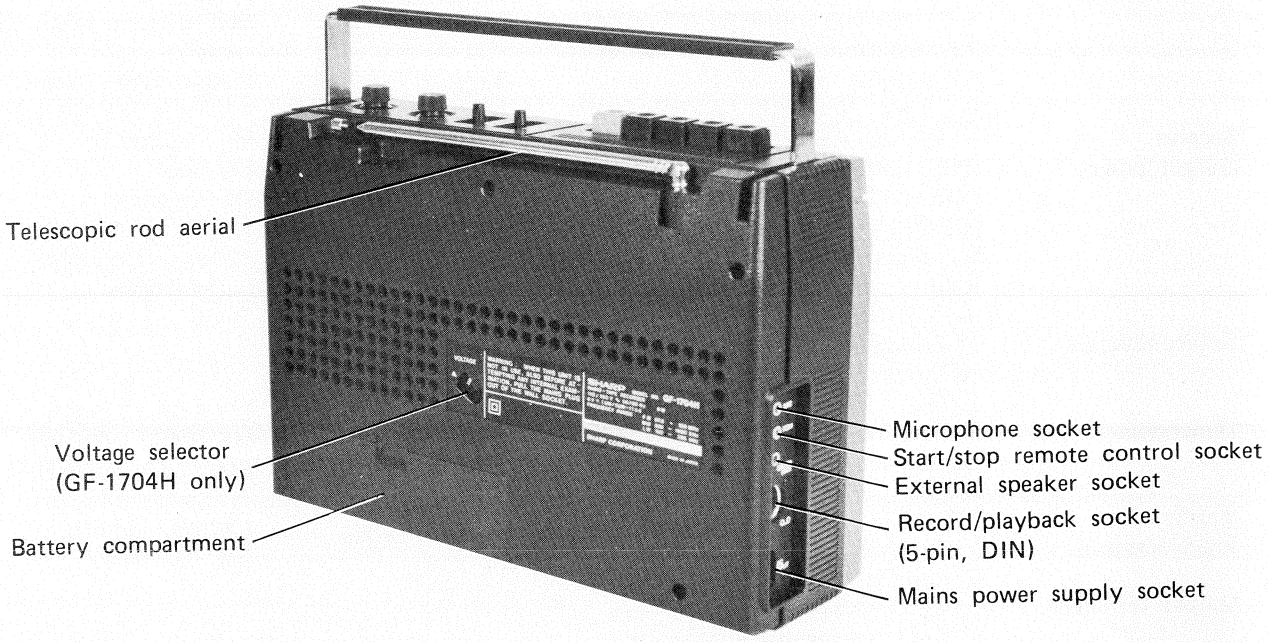


Figure 2

CHECKING BATTERY VOLTAGE

1) If the record/battery condition indicator lights up each time this recorder is put in recording mode, this shows the battery voltage is normal.
2) However, if the indicator does not light or it flickers, this shows the battery capacity is weakened and the voltage is reduced. In this case, replace the batteries with new ones.

VOLTAGE SELECTION (Refer to Figure 3) (GF-1704H)
Check the preset voltage before connecting the mains plug to a mains outlet. If the setting is different from your local supply mains voltage, the selector must be re-set as follows. Rotate the voltage selector by using a screwdriver so that your local voltage number can be seen.

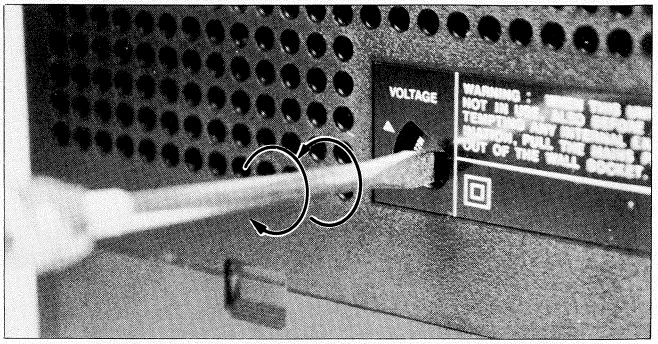


Figure 3

MAINS OPERATION (Refer to Figure 4) (GF-1704H)
Insert the mains plug into a wall outlet (110V or 220V) and the other end plug into mains supply socket of this recorder. The power source will then be changed from batteries to mains.
Warning: When this unit is not in use, also before attempting any internal examination, pull the mains plug out of the wall socket.

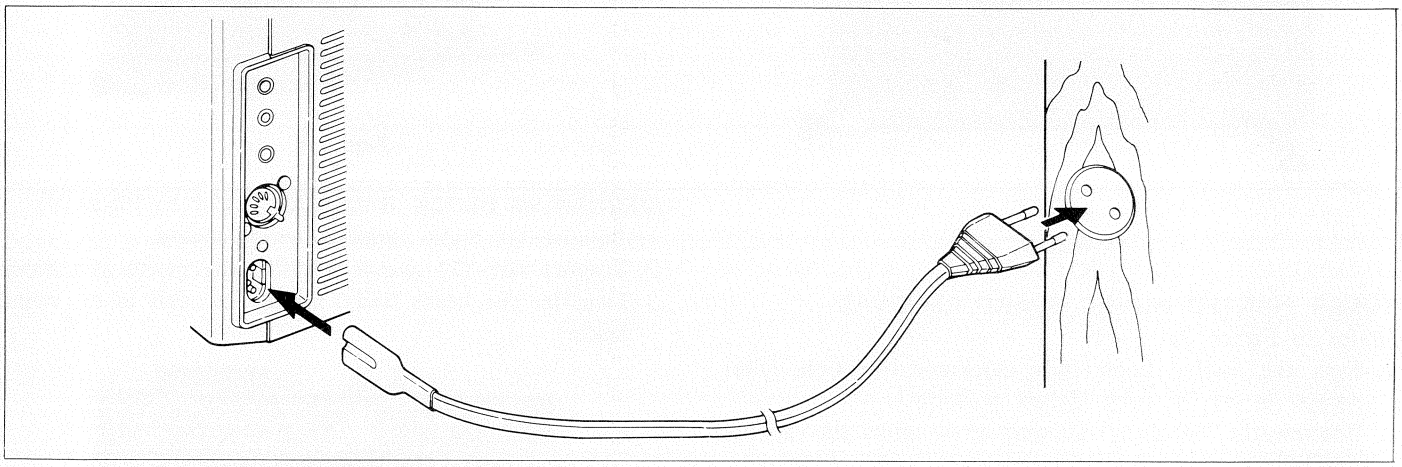


Figure 4

MAINS OPERATION (Refer to Figure 5) (GF-1704E)
1) IMPORTANT
The wires in the mains lead are coloured in accordance with the following code:
BLUE . . . . . .NEUTRAL
BROWN . . . . . .LIVE
You are advised to fit a 13 amp. 3 pin fused plug containing a 3 amp. fuse.
As the colours of the wires may not correspond with markings identifying the terminals in the plug proceed as follows: The wire which is coloured BLUE must be connected to the terminal marked with the letter N or coloured Black. The wire which is coloured BROWN must be connected to the terminal marked with the letter L or coloured Red. Ensure that the terminal screws have been properly tightened and clamp the flex securely with the cord grip.
2) Insert the connector at the other end of the lead into the socket at the side of the set and the plug you have just fitted into a convenient mains outlet. The set is now ready for use.

NOTES: 1) Inserting the mains connector into the side of the set automatically disconnects the batteries.
2) To conserve batteries you are advised to use the mains supply whenever possible.
3) When the unit is used on batteries, remove the mains plug from the wall socket.

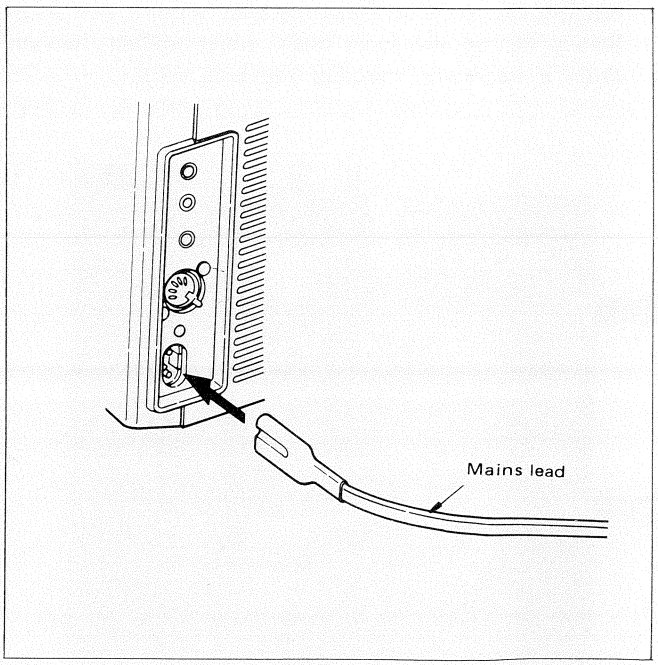


Figure 5

DISASSEMBLY

CABINET BOTTOM REMOVAL (Refer to Figure 6)

1. Take out the cassette from the cassette compartment.
2. Remove the battery compartment cover and take out four (4) batteries.
3. Remove the tuning, volume and tone control knobs.
4. Remove five (5) screws retaining the cabinet back and lightly open it.
5. Disconnect the antenna lead wire.
6. Then the cabinet back can be removed.

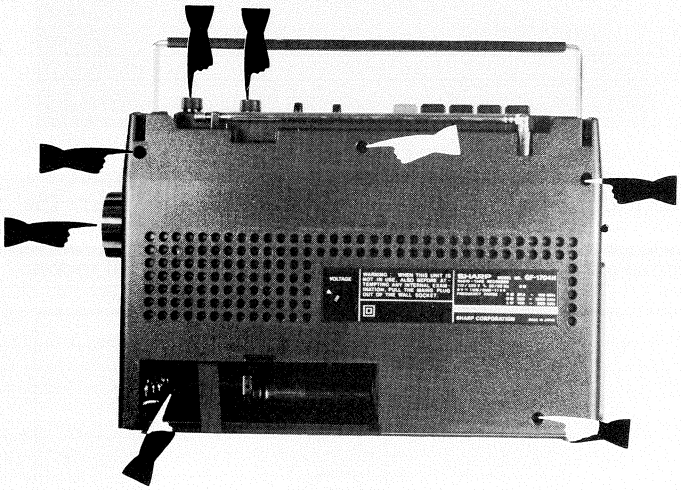


Figure 6

TUNER PRINTED WIRING BOARD REMOVAL
(Refer to Figure 7)

1. Turn the tuning knob fully clockwise direction. (Dial pointer is set for fully highest position.)
2. Unscrew the dial drum retaining screw under the variable capacitor.
3. Remove five (5) screws retaining the tuner printed wiring board.
4. Remove the screw retaining the band selector switch lever.
5. Slowly lift up the tuner board while holding the tuning drum if necessary, unsolder the lead wires.

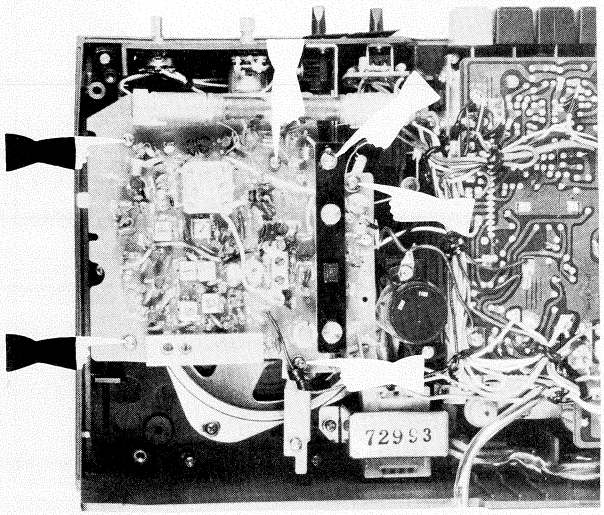


Figure 7

AUDIO PRINTED WIRING BOARD REMOVAL
(Refer to Figure 8)

1. Remove four (4) screws retaining the audio printed wiring board.
2. Remove the screw retaining the heat sink.
3. Remove two (2) screws retaining the jack plate.

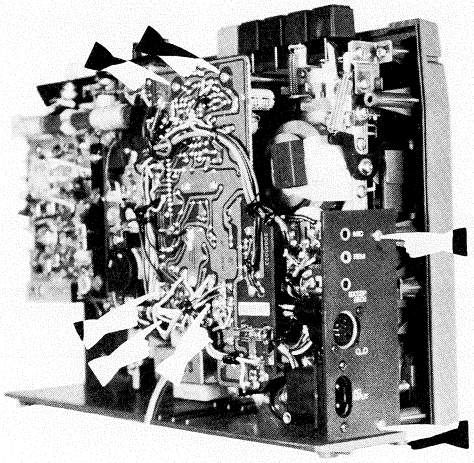
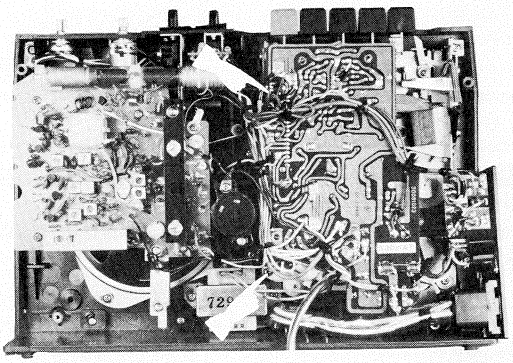


Figure 8

MECHANISM BLOCK REMOVAL (Refer to Figure 9)

1. Remove the audio printed wiring board.
2. Remove five (5) screws retaining the mechanism block.
3. Unsolder the heads leads, motor lead and motor switch leads.



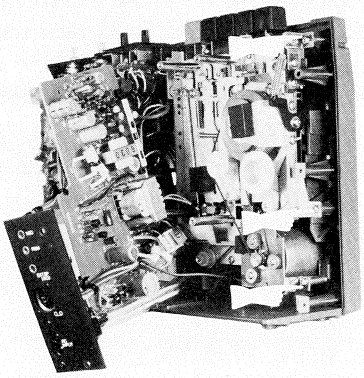
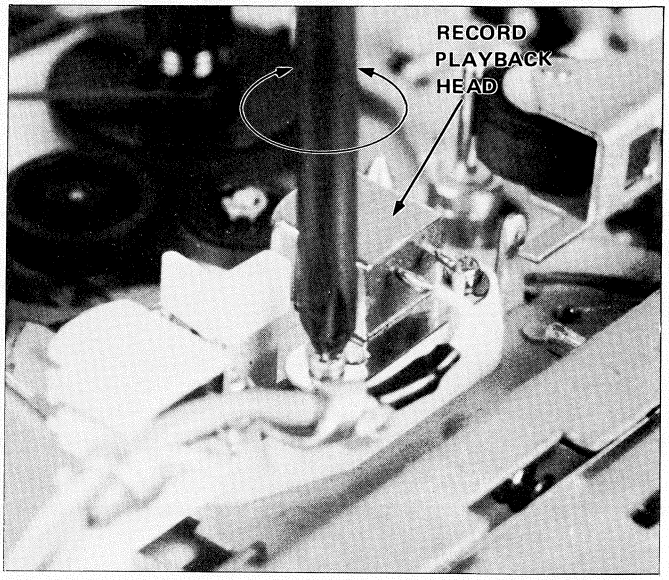


Figure 9

MECHANICAL ADJUSTMENT

RECORD/PLAYBACK HEAD AZIMUTH ADJUSTMENT
(Refer to Figure 10)

1. Playback a standard tape recorded with 6.3kHz signal on the tape recorder.
2. Connect an 8 ohm (2W, 5%) dummy load resistor to external speaker jack and connect V.T.V.M. across the load.
3. Adjust the adjusting screw so that the playback output voltage of the recorded tape becomes maximum.



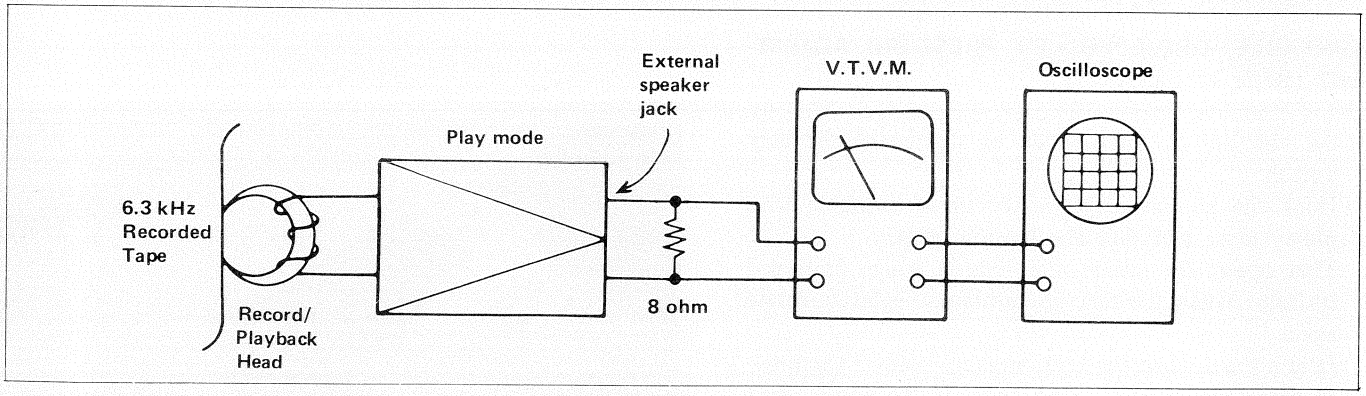


Figure 10

PRESSURE ROLLER PRESSURE ADJUSTMENT
(Refer to Figure 11)

1. With power supply tured on, push the point A with use of tension gauge to make the pressure roller apart from the capstan shaft. Then, gradually release the tension gauge and read its value when the pressure roller stops to rotate.
2. It is normal when the tension gauge reads 400 grams – 500 grams (14 oz – 19 oz). If the above value is not satisfied, adjust the pressure roller lever spring.

PRESSURE ROLLER POSITION ADJUSTMENT
(Refer to Figure 11)

1. With power supply tured off, depress the play button.
2. While pressure roller depressing the capstan, adjust the gap between the pressure roller lever and stopper becomes 0.7mm – 1.2mm (1/32" – 3/64").

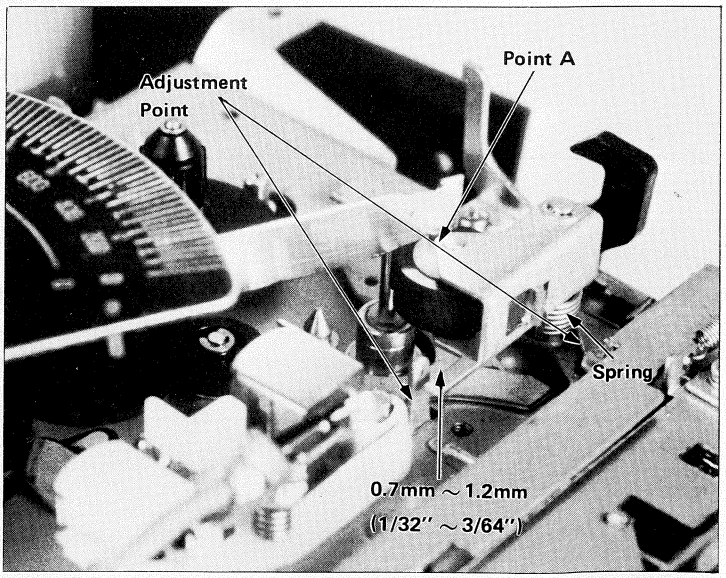


Figure 11

TORQUE CHECK (Refer to Figure 12)

1. Set the torque measuring reel to the turntable (to the take-up side at play or fast forward mode and to the supply side at rewind mode).
2. Then, rotate the reel in the same direction as for turntable and read the torque value when the pointer is stabilized.

Mode	Torque Value
Play	30 – 60gr.cm (1-1/16oz – 2-1/8oz)
Fast Forward	60 – 100gr.cm (2-1/8oz – 3-17/32oz)
Rewind	60 – 100gr.cm (2-1/8oz – 3-17/32oz)

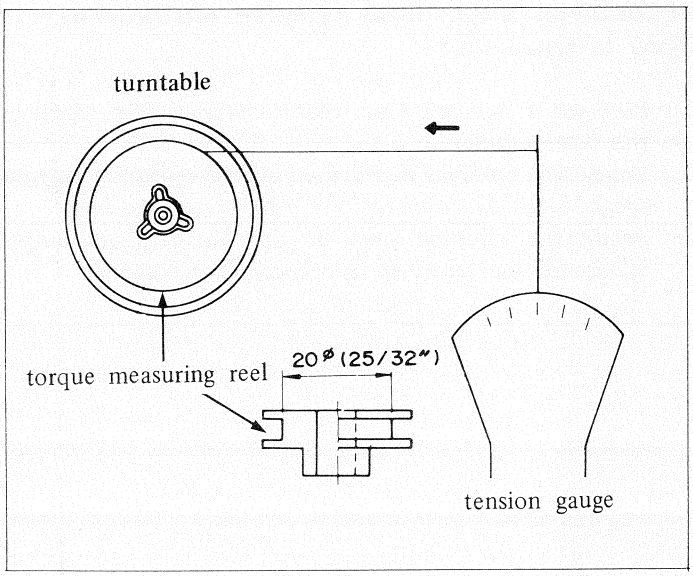


Figure 12

TURNTABLE DRIVE PULLEY PRESSURE ADJUSTMENT (Refer to Figure 13)

1. Set the unit in play mode by depressing the play button.
2. Hook the tension gauge on the tip of turntable drive pulley lever and pull the tension gauge.
3. Then gradually release the tension gauge and read its value when the take-up turntable begins to rotate again.
4. It is normal when the tension gauge reads 30 grams – 60 grams (1-1/16oz – 2-1/8oz). If the above value is not satisfied, adjust the spring for turntable drive pulley lever.

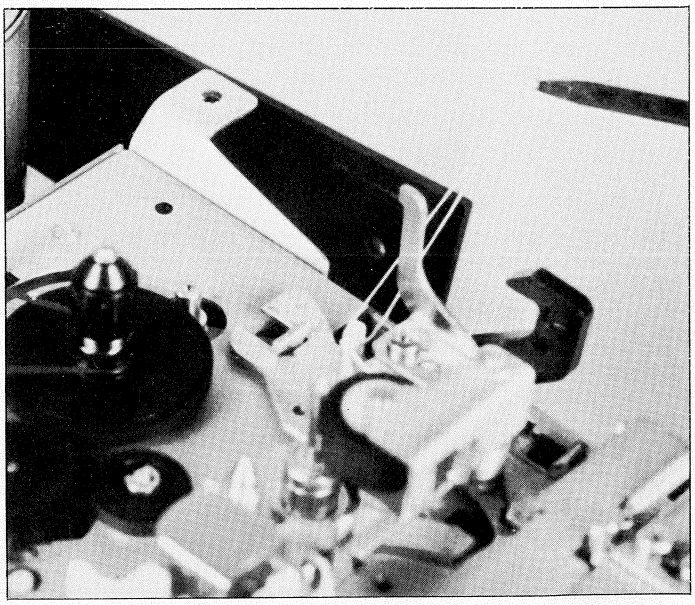


Figure 13

FLYWHEEL THRUST CLEARANCE ADJUSTMENT
(Refer to Figure 14)

Slowly tighten the screw for flywheel thrust clearance until the thrust clearance becomes 0 (zero) and loosen the screw by 1/5 – 3/5 turn from this point. Since screw's pitch is 0.5 mm, thrust clearance of about 0.1 mm – 0.3 mm (1/128" – 1/64") is produced.

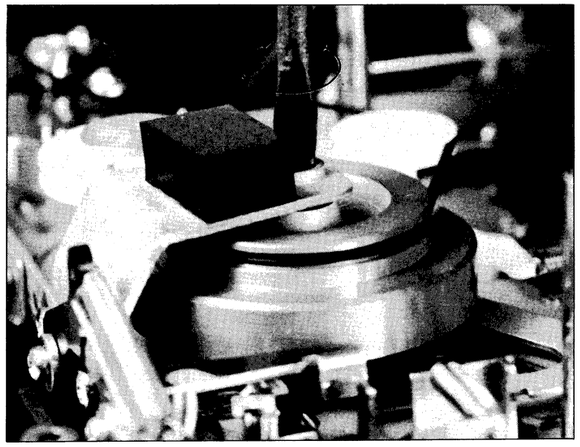


Figure 14

MAIN SWITCH POSITION ADJUSTMENT
(Refer to Figure 15)

While the unit in stop mode, adjust the main switch position as illustrated in Figure 15. After finished adjustment, check the main switch operates normally.

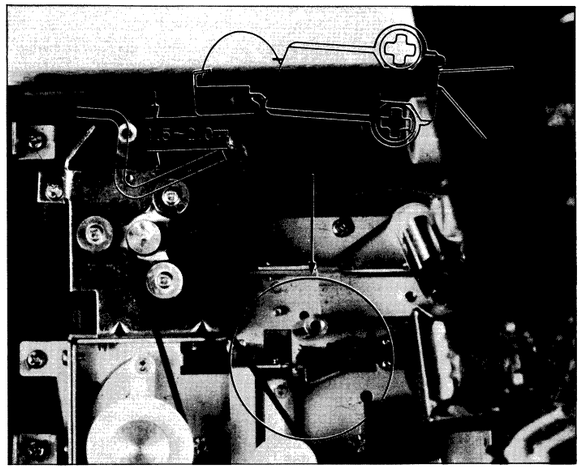


Figure 15

ELECTRICAL CHECK

PLAYBACK SENSITIVITY CHECK (Refer to Figure 16)

1. Connect an 8 ohm (2W, 5%) dummy load resistor to external speaker jack and connect V.T.V.M. across the load.
2. Set the mode switch (SW3) to "TAPE" position.
3. Insert the test tape (MTT – 112 TOKU, 333 Hz, –20 dB recorded).
4. Place the unit in play mode with the volume control at maximum.
5. Rotate the tone control to "HIGH" position.
6. If the playback sensitivity is normal, the reading on the V.T.V.M. should be approximately 1 V.

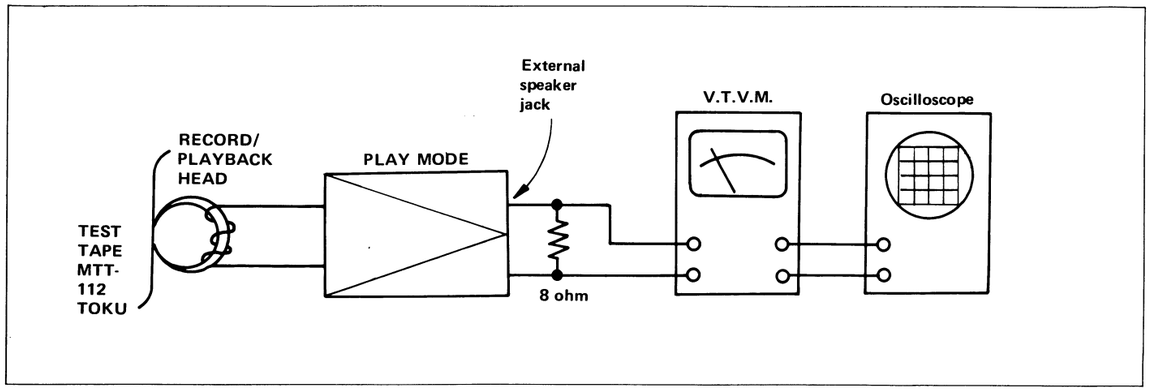


Figure 16

RECORD AMPLIFIER SENSITIVITY CHECK (Refer to Figure 17)

1. Connect an 8 ohm (2W, 5%) dummy load resistor to external speaker jack and connect V.T.V.M. across the load.
2. Set the mode switch (SW3) to "TAPE" position.
3. Insert the tape.
4. Connect the signal generator for 1 kHz, –44 dB (0 dB : 1 V) to External microphone jack.
5. If the record sensitivity is normal, the reading on the V.T.V.M. should be approximately 70 ± 20 mV.

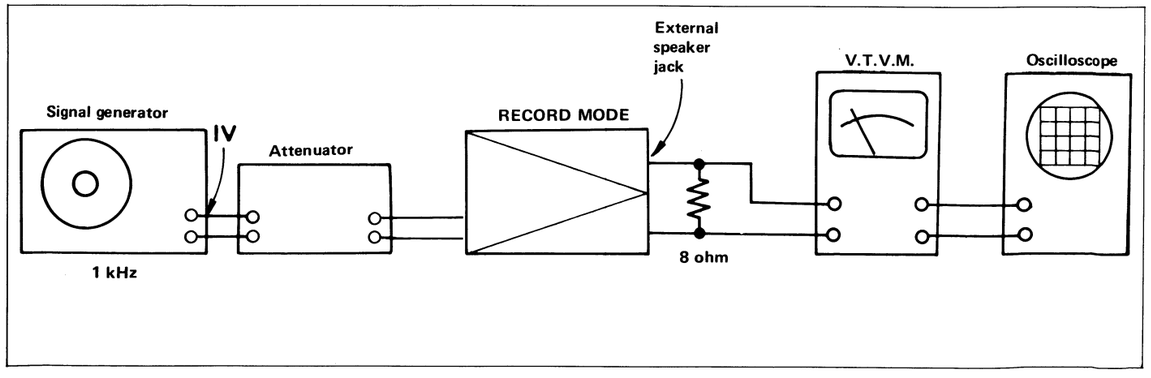


Figure 17

DIAL CORD STRINGING

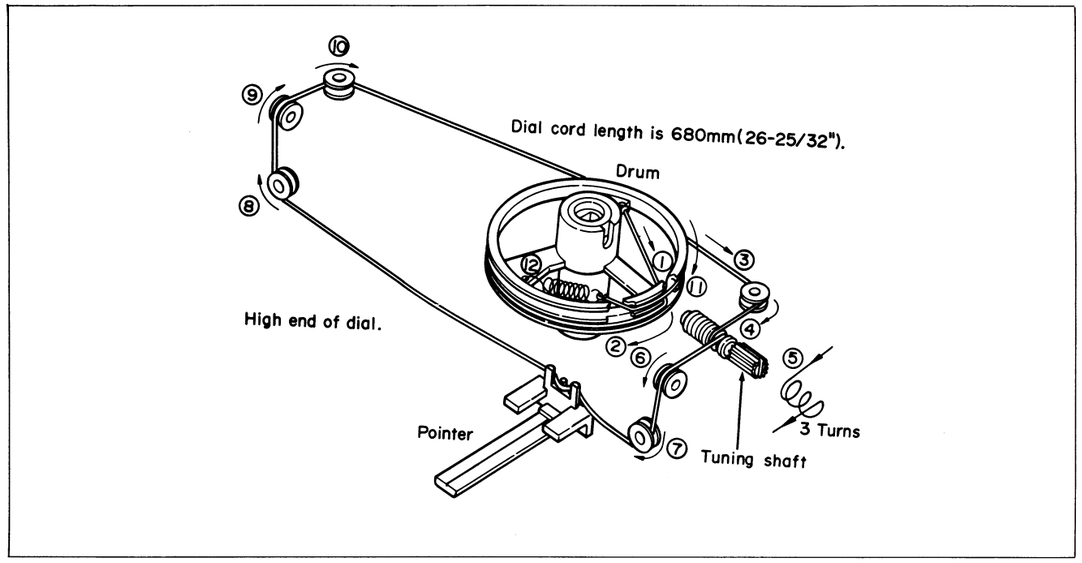


Figure 18

ALIGNMENT POINTS

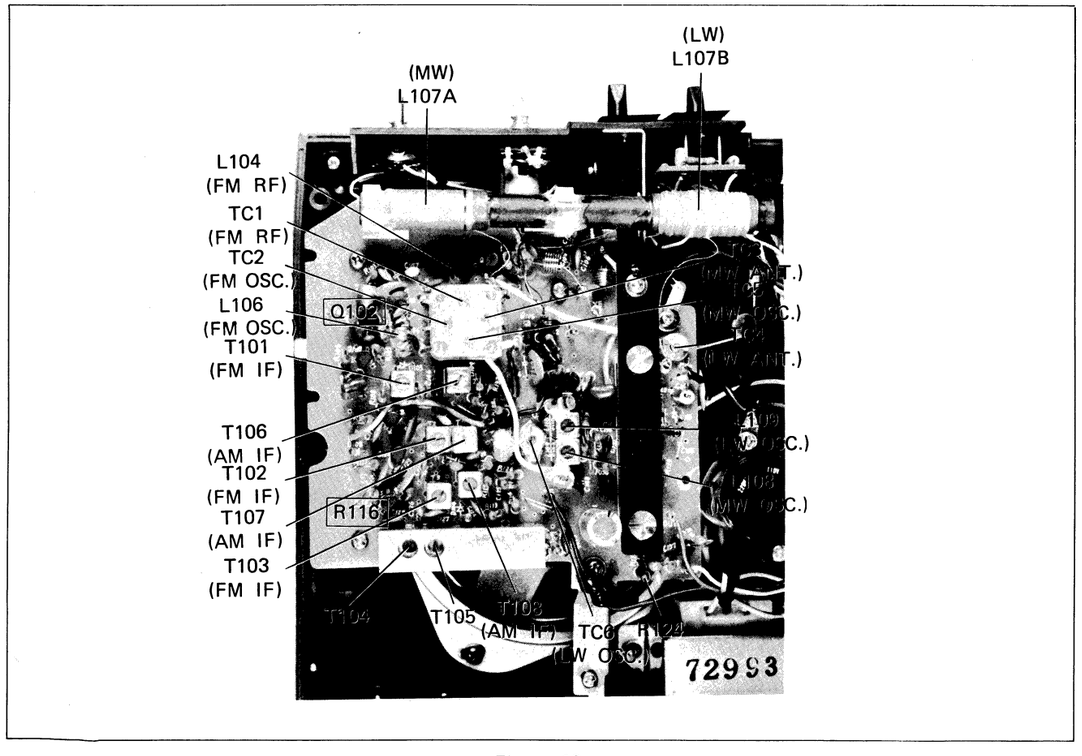


Figure 19

GENERAL ALIGNMENT INSTRUCTIONS

Should it become necessary at anytime to check the alignment of this receiver, proceed as follows;

1) Connect an output meter across the speaker voice coil lugs.
2) Set the volume control at maximum.
3) Attenuate the signals from the generator enough to swing the most sensitive range of the output meter.
4) Use a non-metallic alignment tool.
5) Repeat adjustments to insure good results.

AM ALIGNMENT CHART

STEP	BAND	TEST STAGE	SIGNAL GENERATOR		RECEIVER		ADJUSTMENT
			CONNECTION TO RECEIVER	INPUT SIGNAL FREQUENCY	DIAL SETTING	REMARKS	
1	MW	IF	Connect signal generator through a 10k ohm resistor to the antenna tuning capacitor. Ground lead to the receiver chassis.	455 kHz. (400 Hz, 30%, AM modulated.)	High end of dial (minimum capacity)	Adjust for maximum output on speaker voice coil lugs.	T106 T107 T108
2	MW	Band Coverage	Use radiation loop. Loop of several turns of wire, or place generator lead close to receiver for adequate signal pickup. Connect generator output to one end of this wire.	Exactly 510 kHz. (400 Hz, 30%, AM modulated.)	Low end of dial (maximum capacity)	Same as step 1.	Adjust the MW oscillator coil (L108).
3	MW		Same as step 2.	Exactly 1650 kHz. (400 Hz, 30%, AM modulated)	High end of dial (minimum capacity)	Same as step 1.	Adjust the MW oscillator trimmer (TC5).
4	MW	Tracking	Same as step 2.	Exactly 600 kHz (400 Hz, 30%, AM modulated)	600 kHz	Same as step 1.	**Adjust the MW antenna coil (L107A). (See NOTE A.)**
5	MW		Same as step 2.	Exactly 1400 kHz (400 Hz, 30%, AM modulated)	1400 kHz	Same as step 1.	Adjust the MW antenna trimmer (TC3). (See NOTE A.)
6	MW		Repeat steps 2, 3, 4 and 5 until no further improvement can be made.				
7	LW	Band Coverage	Same as step 2.	Exactly **145KHz.** (400 Hz, 30%, AM modulated.)	Low end of dial. (maximum capacity)	Same as step 1.	Adjust the **LW** oscillator coil **(L109).**
8	LW		Same as step 2.	Exactly **295KHz.** (400 Hz, 30%, AM modulated.)	High end of dial (minimum capacity)	Same as step 1.	Adjust the **LW** oscillator trimmer **(TC6).**
9	LW	Tracking	Same as step 2.	Exactly **160KHz.** (400 Hz, 30%, AM modulated.)	**160KHz**	Same as step 1.	Adjust the **LW** antenna coil **(L107B).**
10	LW		Same as step 2.	Exactly **260KHz.** (400 Hz, 30%, AM modulated.)	**260KHz**	Same as step 1.	Adjust the **LW** antenna trimmer **(TC4).**
11	LW		Repeat steps 7, 8, 9 and 10 until no further improvement can be made.				

NOTE A

Check the alignment of the receiver antenna coil by bringing a piece of ferrite (such as a coil slug) near the antenna loop stick, then a piece of brass. If ferrite increase output, loop requires more inductance. If brass increases output, loop requires less inductance. Change loop inductance by sliding the bobbin toward the center of ferrite core to increase inductance, or away to decrease inductance.

FM ALIGNMENT CHART

Set the Band Selector switch at "FM" position

STEP	TEST STAGE	SIGNAL GENERATOR		RECEIVER		ADJUSTMENT
		CONNECTION TO RECEIVER	INPUT SIGNAL FREQUENCY	DIAL SETTING	REMARKS	
1	IF	Connect signal generator through a 5PF capacitor to the emitter of Q102. Connect generator ground lead to the receiver chassis.	Exactly 10.7 MHz. (400 Hz, 30%, FM modulated)	Tuning gang fully closed. (maximum capacity)	Connect VTVM across the resistor (R116).	Detune T104,T105 Tune T101,T102 and T103 for maximum indication
2	Ratio Detector	Same as step 1.	Exactly 10.7 MHz. (Unmodulated)	Same as step 1.	See NOTE B.	See NOTE B.
3	Band Coverage	Connect signal generator through a dummy, including output impedance of signal generator to the FM antenna. (Refer to Figure 20) Ground lead of generator connected to the receiver chassis.	Exactly 87 MHz, (400 Hz, 30%, FM modulated)	Tuning gang fully closed. (maximum capacity)	Adjust for maximum output speaker voice coil lugs.	Adjust the FM oscillator coil L106.
4	Band Coverage	Same as step 3.	Exactly 109 MHz. (400 Hz, 30%, FM modulated)	Tuning gang fully open. (minimum capacity)	Same as step 3.	Adjust the FM oscillator trimmer TC2.
5	Tracking	Same as step 3.	Exactly 88 MHz. (400Hz, 30%, FM modualted)	88 MHz	Same as step 3.	Adjust the FM RF coil L104.
6	Tracking	Same as step 3.	Exactly 108 MHz (400 Hz, 30%, FM modulated)	108 MHz	Same as step 3.	Adjust the FM RF trimmer TC1.
7		Repeat steps 3, 4, 5 and 6 until no further improvement can be made.				

NOTE B

1) Connect VTVM (0.1 volts range DC scale) across the resistor (R124).
2) Adjust T105 for 0 volt on VTVM.
3) Change signal generator frequency 10.7 MHz + 100 kHz and −100 kHz approximately.
4) Adjust T104 for balanced peaks. Peak separation should be approximately 200 kHz.

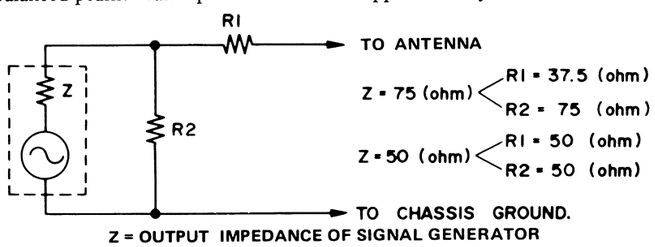


Figure 20 FM DUMMY

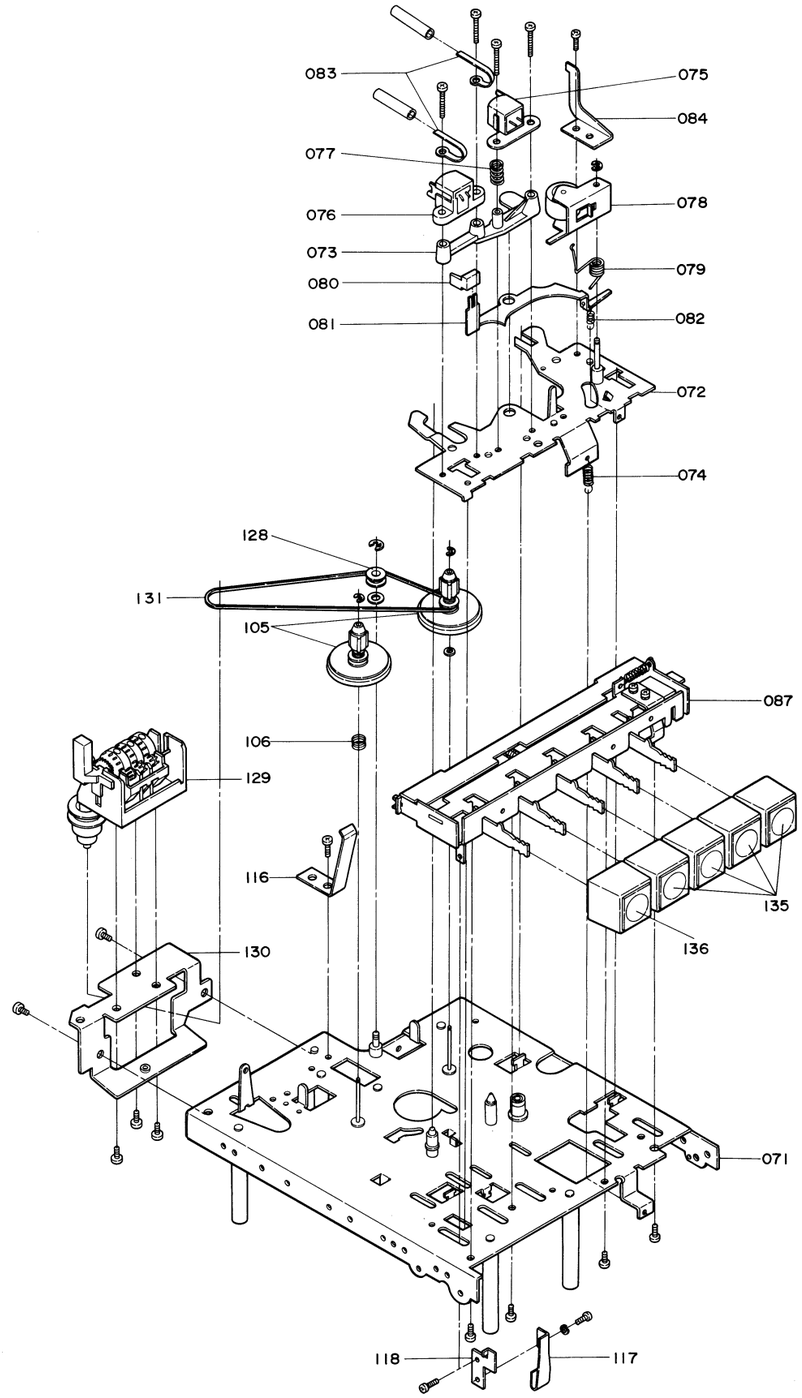


Figure 21 MECHANISM EXPLODED TOP VIEW

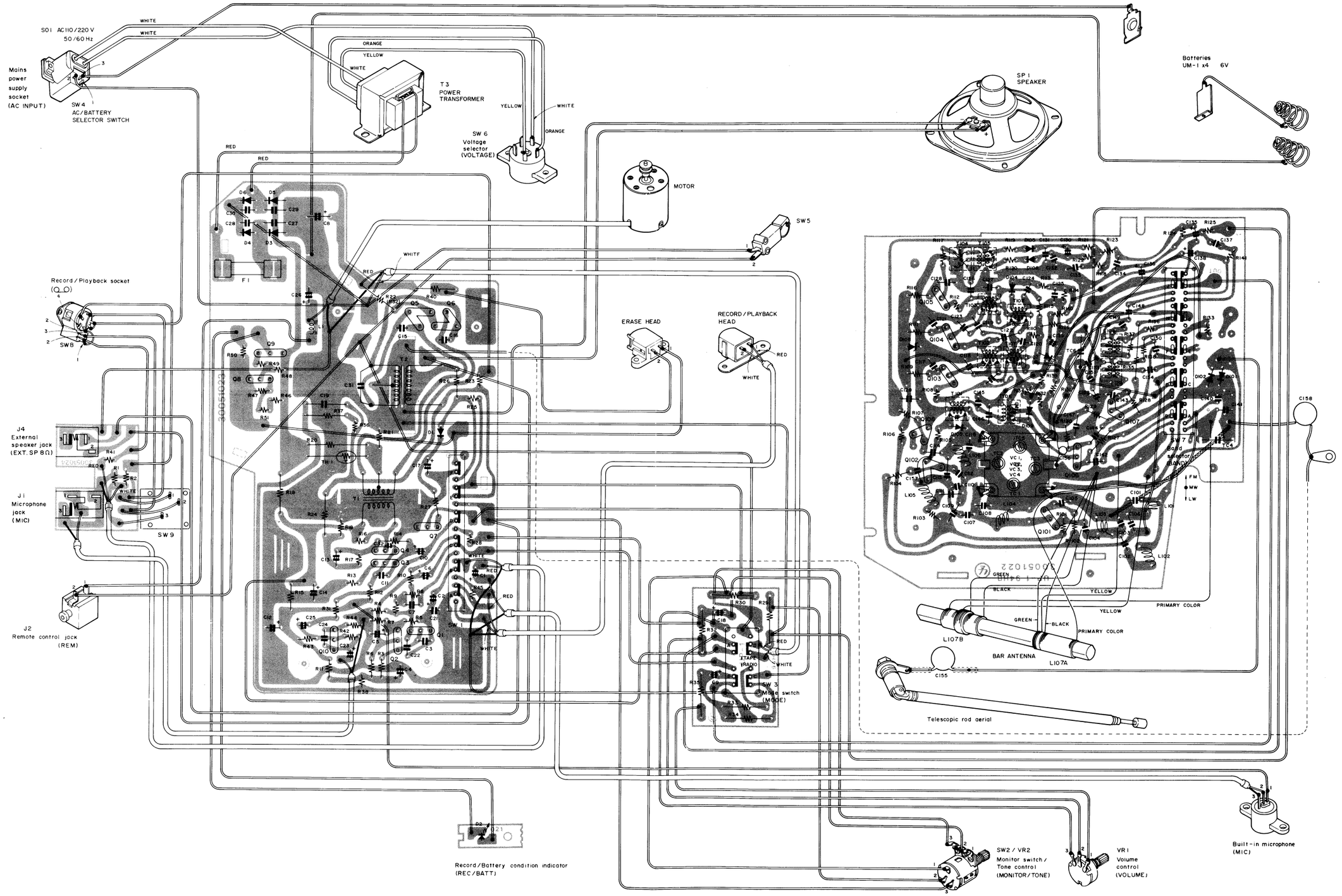
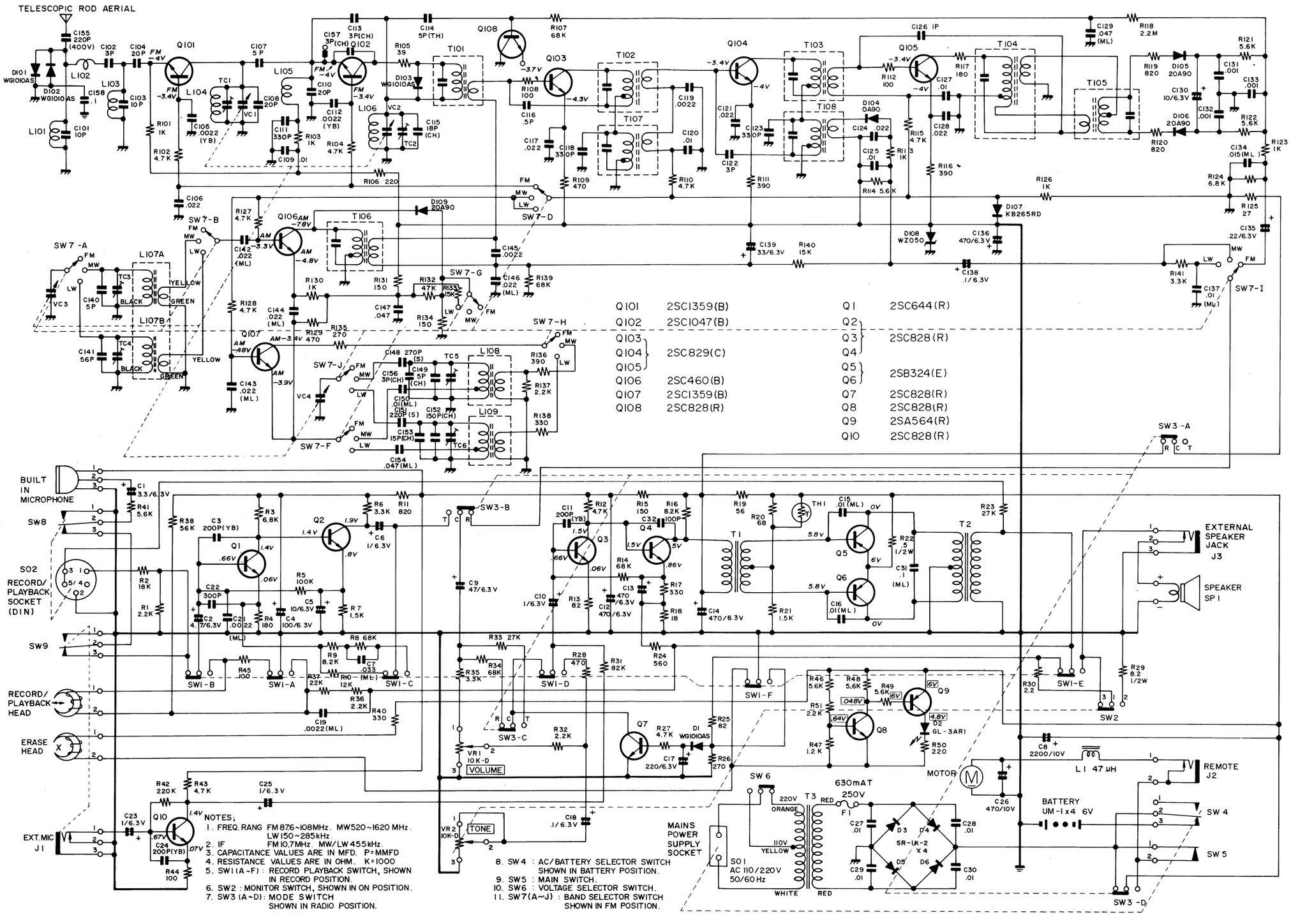


Figure 22 WIRING SIDE OF PRINTED WIRING BOARD (GF-1704H)



Q101	2SC1359(B)	Q1	2SC644(R)
Q102	2SC1047(B)	Q2	
Q103		Q3	2SC828(R)
Q104	2SC829(C)	Q4	
Q105		Q5	
Q106	2SC460(B)	Q6	2SB324(E)
Q107	2SC1359(B)	Q7	2SC828(R)
Q108	2SC828(R)	Q8	2SC828(R)
		Q9	2SA564(R)
		Q10	2SC828(R)

Specifications or wiring diagrams of this model are subject to change for the improvemet without prior notice.

Figure 23 SCHEMATIC DIAGRAM (GF-1704H)

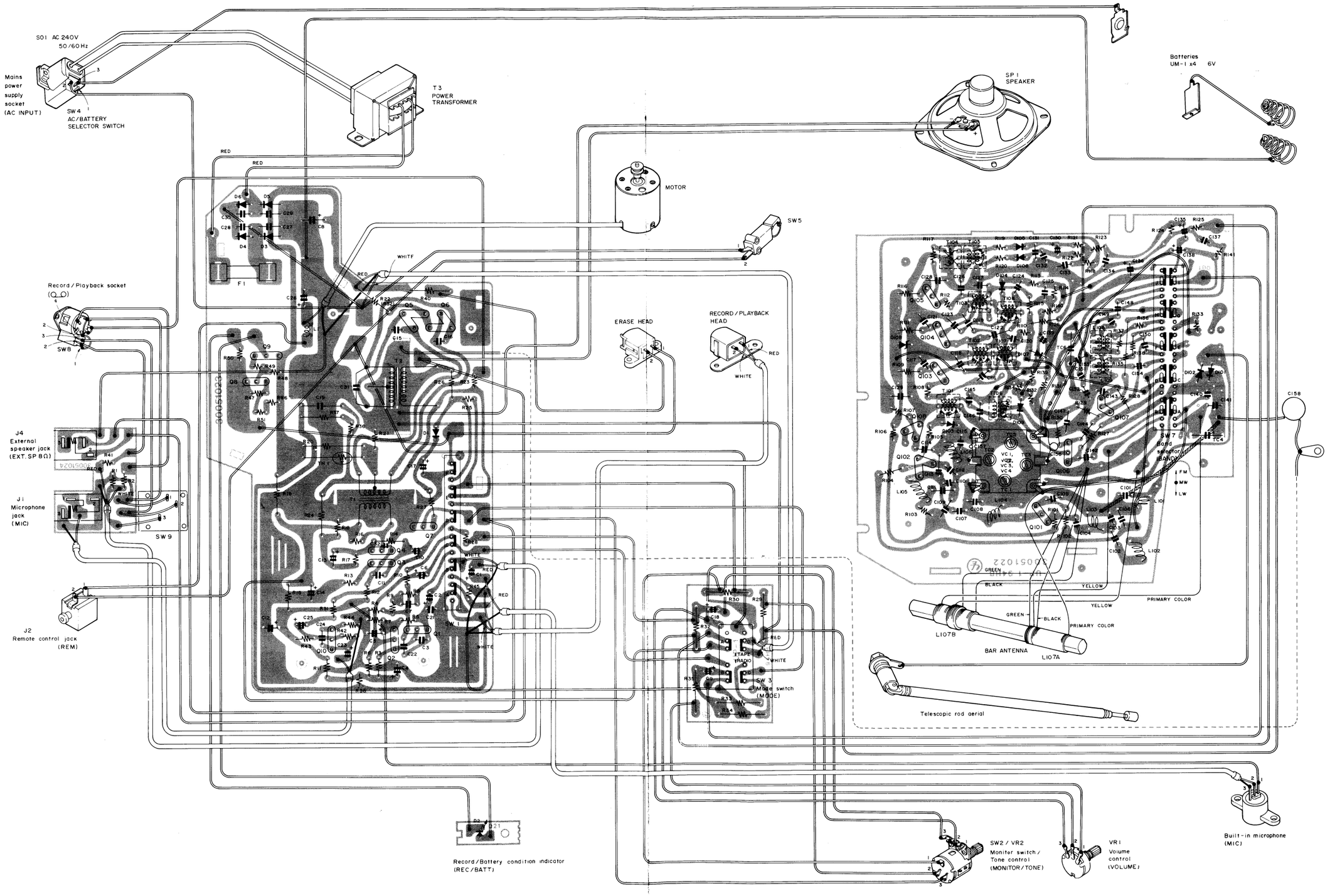
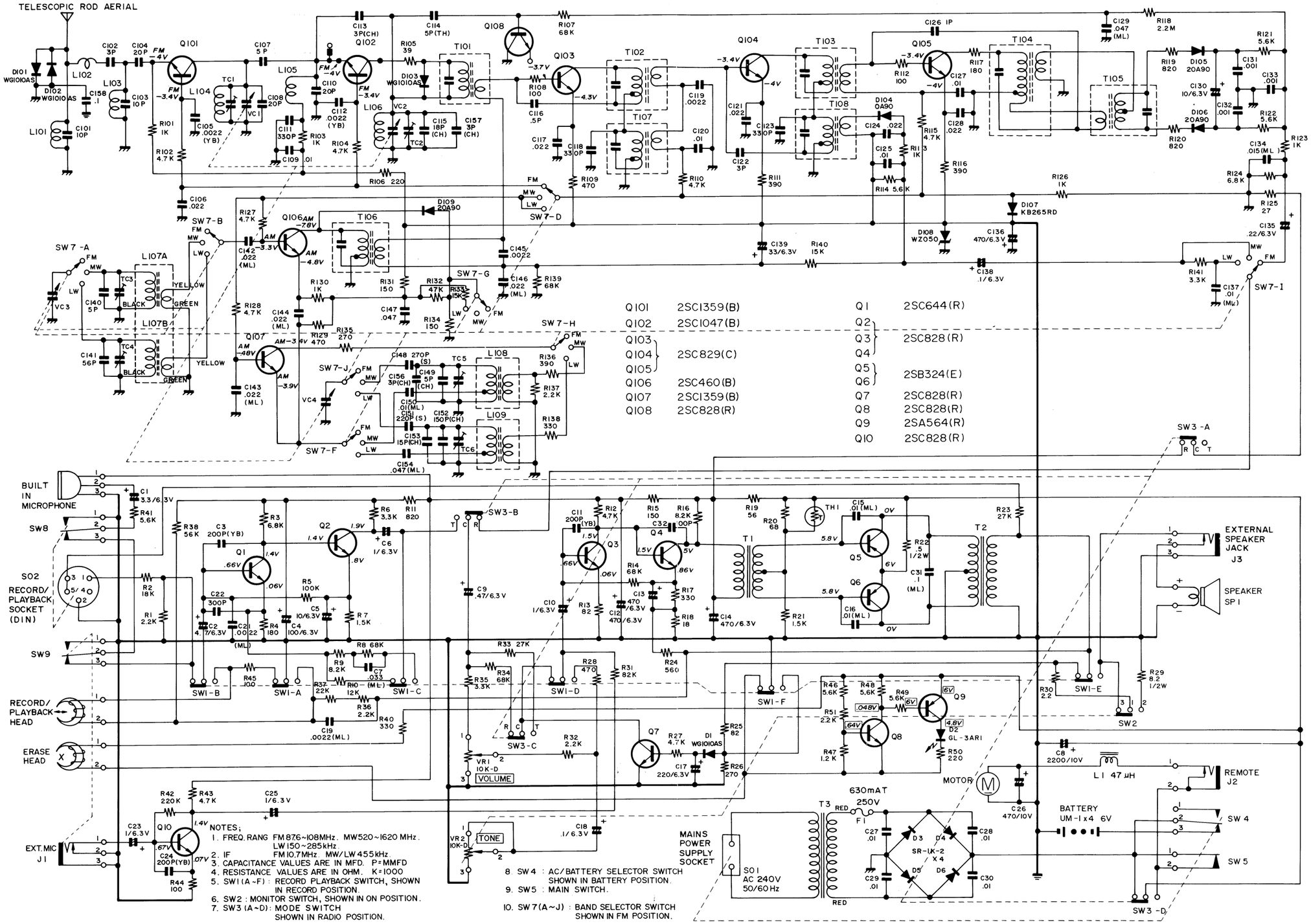


Figure 24 WIRING SIDE OF PRINTED WIRING BOARD (GF-1704E)



Specifications or wiring diagrams of this model are subject to change for the improvemet without prior notice.

Figure 25 SCHEMATIC DIAGRAM (GF-1704E)

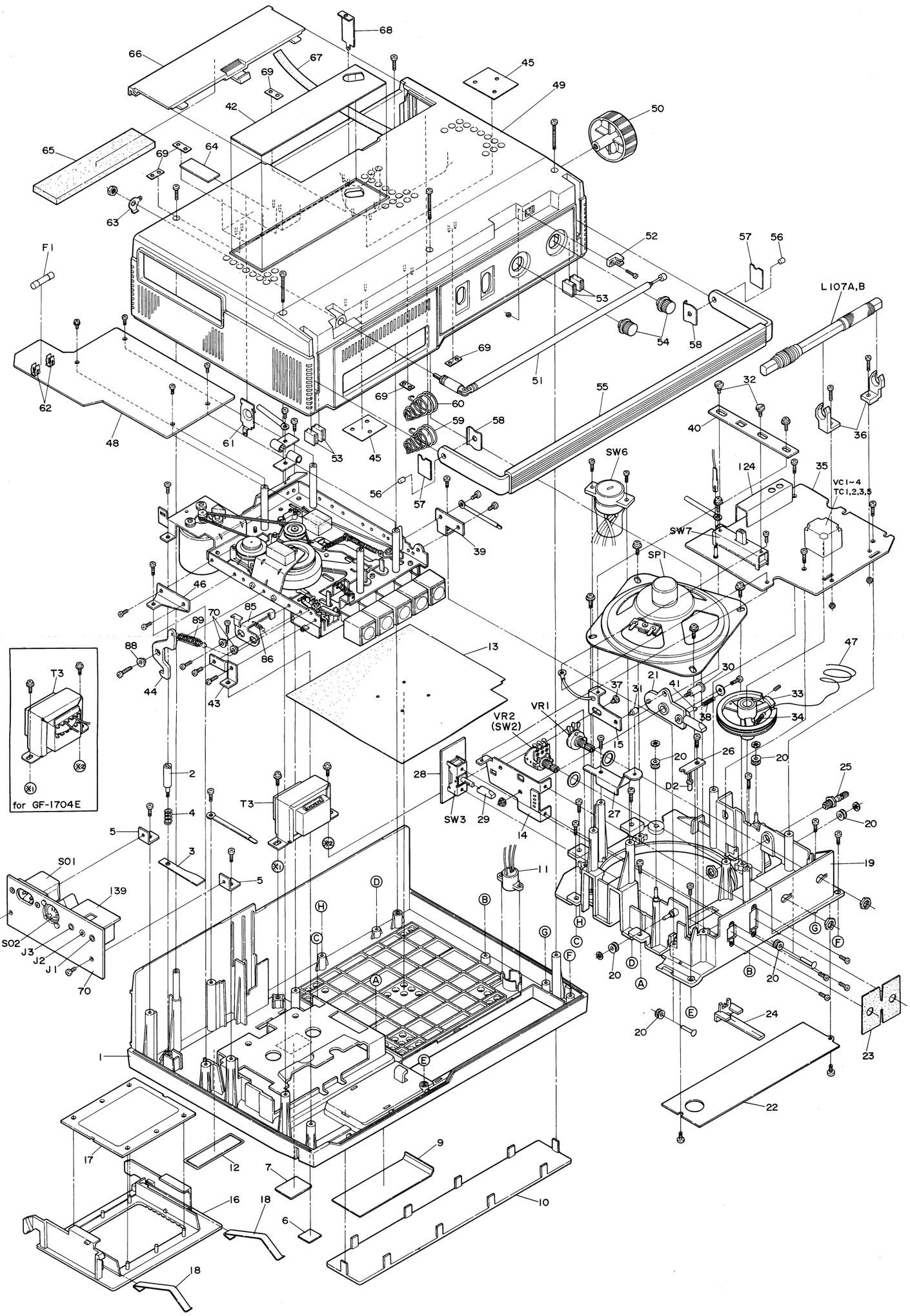


Figure 26 CABINET EXPLODED VIEW

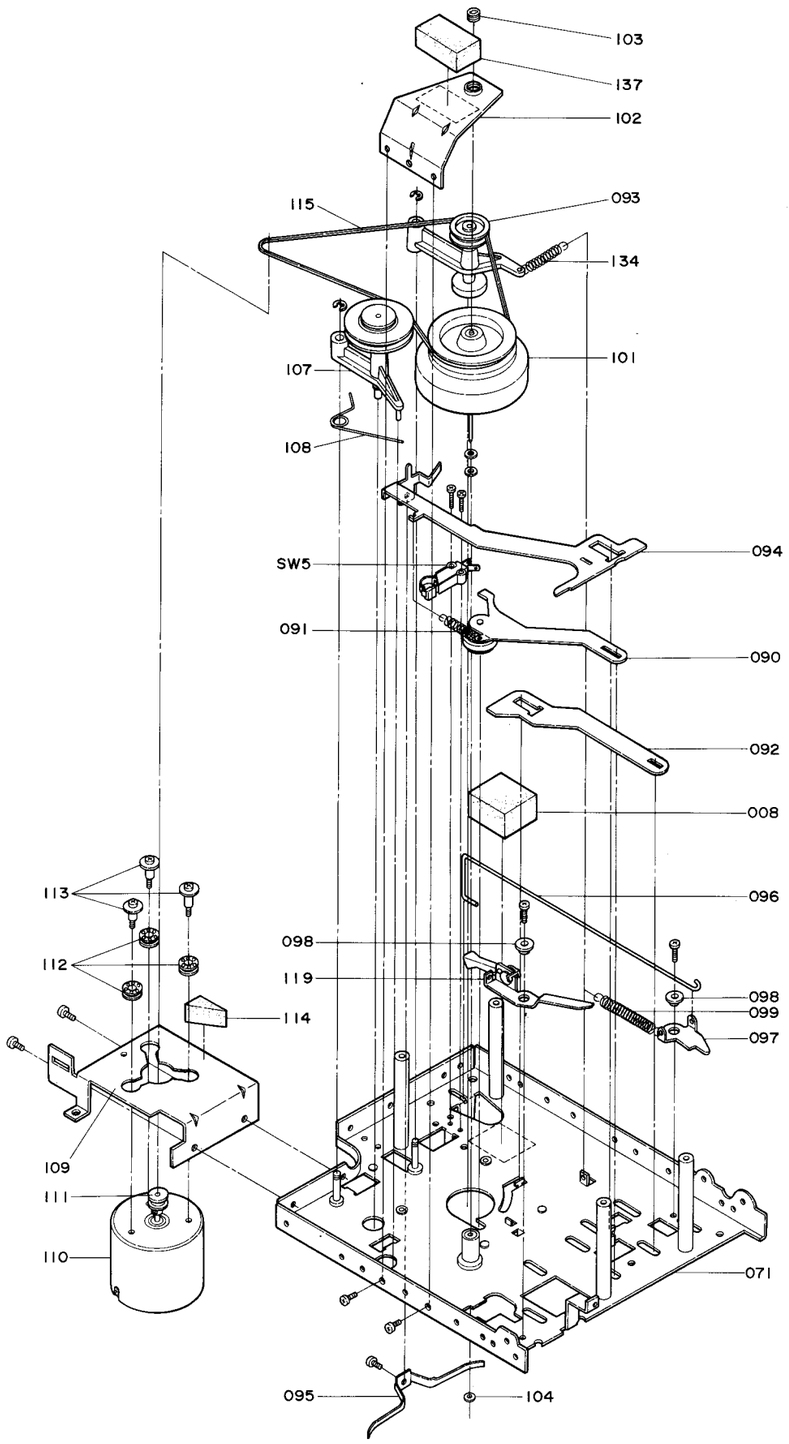


Figure 27 MECHANISM EXPLODED BOTTOM VIEW

REPLACEMENT PARTS LIST

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER 2. REF. NO.
3. PART NO. 4. DESCRIPTION

REF. NO.	PART NO.	DESCRIPTION	CODE
		TRANSISTORS	
Q1	91Q3131644R	Equalizer Amp. (2SC-644R)	AD
Q2	91Q3131828R	Equalizer Amp. (2SC-828R)	AC
Q3	91Q3131828R	1st Audio Amp. (2SC-828R)	AC
Q4	91Q3131828R	2nd Audio Amp. (2SC-828R)	AC
Q5, Q6	91Q3121324E	Audio Output, With Heatsink (2SB-324E)	AG
Q7	91Q3131828R	A.L.C. (2SC-828R)	AC
Q8	91Q3131828R	Record/Battery Condition Indicator (2SC-828R)	AC
Q9	91Q3111564R	Record/Battery Condition Indicator (2SA-564R)	–
Q10	91Q3131828R	Microphone Amp. (2SC-828R)	AC
Q101	91Q3131359B	FM RF Amp. (2SC-1359B)	AD
Q102	91Q3131047B	FM Converter (2SC-1047B)	AE
Q103	91Q3131829C	1st FM/MW/LW IF Amp. (2SC-829C)	AC
Q104	91Q3131829C	2nd FM/MW/LW IF Amp. (2SC-829C)	AC
Q105	91Q3131829C	3rd FM IF Amp. (2SC-829C)	AC
Q106	91Q3133460B	MW/LW Mixer (2SC-460B)	AC
Q107	91Q3131359B	MW/LW Oscillator (2SC-1359B)	AD
Q108	91Q3131828R	A.F.C. (2SC-828R)	AC
		DIODES	
D1	91Q321610AS	A.L.C. (WG1010AS)	AB
D2	VHPGL3AR1//-1	L.E.D., Record/Battery Condition Indicator (GL-3AR1) (32773AR1)	AD
D3, D4, D5, D6	91Q3255M102	Power Rectifier (SR-1K-2)	AE
D101, D102	91Q321610AS	Static Protector (WG1010AS)	AB
D103	91Q321610AS	FM Overload (WG1010AS)	AB
D104	91Q32110A90	MW Detector (QA90)	AB
D105, D106	91Q322120A9	FM Detector (20A90)	AB
D107	91Q3264265R	Bias Stabilizer (KB265RD)	AD
D108	91Q3232WZ05	Zener, 5V ± 0.3V (WZ050)	AE
D109	91Q322120A9	MW Overload (20A90)	AB
		THERMISTOR	
TH1	91Q17MT0060	Temperature Compensation	AB
		COILS	
L101	91Q341Z1267	FM Antenna	AB
L102	91Q3414Z997	FM Antenna	AC
L103	91Q341Z1267	FM Antenna	AB
L104	91Q341Z1164	FM RF	AC
L105	91Q3414Z997	FM IF Trap	AC
L106	91Q341Z1165	FM Oscillator	AB
L107A,B	91Q34410012	MW/LW Bar Antenna	–
L108	91Q34360365	MW Oscillator	–
L109	91Q34410013	LW Oscillator	–
L1	91Q3420047K	Noise Choke, 47μH	–
		TRANSFORMERS	
T1	91Q33326030	Audio Driver	–
T2	91Q33405049	Audio Output	AL
T3	91Q33272993	Power (GF-1704H)	–
T101	91Q34270157	1st FM IF	AF
T102	91Q34270157	2nd FM IF	AF
T103	91Q34270157	3rd FM IF	AF
T104	91Q34270183	FM Discriminator	AF
T105	91Q34270182	FM Discriminator	AF
T106	91Q34170468	1st AM IF	AE
T107	91Q34170469	2nd AM IF	AE
T108	91Q34170470	3rd AM IF	AE
T3	RTRNP0483AFZZ	Power (GF-1704E)	–
		CONTROLS	
VR1	91Q3954C102	Volume Control, 10K (D) ohm	AF
VR2	91Q3964A098	Tone Control, 10K (D) ohm, with Monitor Switch (SW2)	–
		ELECTROLYTIC CAPACITORS	
C1	91Q24511339	3.3MFD, 6.3V	AB
C2	91Q24511479	4.7MFD, 6.3V	AB
C4	91Q24511101	100MFD, 6.3V	AC
C5	91Q24511100	10MFD, 6.3V	AB
C6	91Q24511109	1MFD, 6.3V	AB
C8	91Q24511222	2200MFD, 10V	AF
C9	91Q24511479	.47MFD, 6.3V	AB
C10	91Q24511109	1MFD, 6.3V	AB
C12	91Q24511471	470MFD, 6.3V	AD
C13	91Q24511471	470MFD, 6.3V	AD
C14	91Q24511471	470MFD, 6.3V	AD
C17	91Q24511221	220MFD, 6.3V	AC
C18	91Q25211104	.1MFD, 6.3V, +10 −10%, Aluminum	AC
C23	91Q24511109	1MFD, 6.3V	AB
C25	91Q24511109	1MFD, 6.3V	AB
C26	91Q24511471	470MFD, 10V	AD
C130	91Q24511100	10MFD, 6.3V	AB
C135	91Q25311224	.22MFD, 6.3V, +20 −20%, Aluminum	AD
C136	91Q24511109	1MFD, 6.3V	AB
C138	91Q24511109	1MFD, 6.3V	AB
C139	91Q24511471	470MFD, 10V	AD
C7	91Q24511109	1MFD, 6.3V	AB
C15	91Q24511109	1MFD, 6.3V	AB
C16	91Q24511471	470MFD, 10V	AD
C19	91Q24511109	1MFD, 6.3V	AB
C21	91Q24511109	1MFD, 6.3V	AB
C31	91Q24511471	470MFD, 10V	AD
C129	91Q24511100	10MFD, 6.3V	AB
C134	91Q24511109	1MFD, 6.3V	AB
C137	91Q24511109	1MFD, 6.3V	AB
C142	91Q24511109	1MFD, 6.3V	AB
C143	91Q24511109	1MFD, 6.3V	AB
C144	91Q24511109	1MFD, 6.3V	AB
C146	91Q24511109	1MFD, 6.3V	AB
C150	91Q24511109	1MFD, 6.3V	AB
C154	91Q24511109	1MFD, 6.3V	AB
C148	91Q24511109	1MFD, 6.3V	AB
C151	91Q24511109	1MFD, 6.3V	AB
VC1, VC2, VC3, VC4, TC1, TC2, TC3, TC5	91Q24511109	1MFD, 6.3V	AB
TC4	91Q24511109	1MFD, 6.3V	AB
TC6	91Q24511109	1MFD, 6.3V	AB
C3	91Q24511109	1MFD, 6.3V	AB
C11	91Q24511109	1MFD, 6.3V	AB
C22	91Q24511109	1MFD, 6.3V	AB
C24	91Q24511109	1MFD, 6.3V	AB
C27, C28, C29, C30	91Q24511109	1MFD, 6.3V	AB
C32	91Q24511109	1MFD, 6.3V	AB
C101	91Q24511109	1MFD, 6.3V	AB
C102	91Q24511109	1MFD, 6.3V	AB
C103	91Q24511109	1MFD, 6.3V	AB
C104	91Q24511109	1MFD, 6.3V	AB
C105	91Q24511109	1MFD, 6.3V	AB
C106	91Q24511109	1MFD, 6.3V	AB
C107	91Q24511109	1MFD, 6.3V	AB

REPLACEMENT PARTS LIST

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER 2. REF. NO.
3. PART NO. 4. DESCRIPTION

REF. NO.	PART NO.	DESCRIPTION	CODE
		TRANSISTORS	
Q1	91Q3131644R	Equalizer Amp. (2SC-644R)	AD
Q2	91Q3131828R	Equalizer Amp. (2SC-828R)	AC
Q3	91Q3131828R	1st Audio Amp. (2SC-828R)	AC
Q4	91Q3131828R	2nd Audio Amp. (2SC-828R)	AC
Q5, Q6	91Q3121324E	Audio Output, With Heatsink (2SB-324E)	AG
Q7	91Q3131828R	A.L.C. (2SC-828R)	AC
Q8	91Q3131828R	Record/Battery Condition Indicator (2SC-828R)	AC
Q9	91Q3111564R	Record/Battery Condition Indicator (2SA-564R)	–
Q10	91Q3131828R	Microphone Amp. (2SC-828R)	AC
Q101	91Q3131359B	FM RF Amp. (2SC-1359B)	AD
Q102	91Q3131047B	FM Converter (2SC-1047B)	AE
Q103	91Q3131829C	1st FM/MW/LW IF Amp. (2SC-829C)	AC
Q104	91Q3131829C	2nd FM/MW/LW IF Amp. (2SC-829C)	AC
Q105	91Q3131829C	3rd FM IF Amp. (2SC-829C)	AC
Q106	91Q3133460B	MW/LW Mixer (2SC-460B)	AC
Q107	91Q3131359B	MW/LW Oscillator (2SC-1359B)	AD
Q108	91Q3131828R	A.F.C. (2SC-828R)	AC
		DIODES	
D1	91Q321610AS	A.L.C. (WG1010AS)	AB
D2	VHPGL3AR1//-1	L.E.D., Record/Battery Condition Indicator (GL-3AR1) (32773AR1)	AD
D3, D4, D5, D6	91Q3255M102	Power Rectifier (SR-1K-2)	AE
D101, D102	91Q321610AS	Static Protector (WG1010AS)	AB
D103	91Q321610AS	FM Overload (WG1010AS)	AB
D104	91Q32110A90	MW Detector (QA90)	AB
D105, D106	91Q322120A9	FM Detector (20A90)	AB
D107	91Q3264265R	Bias Stabilizer (KB265RD)	AD
D108	91Q3232WZ05	Zener, 5V ± 0.3V (WZ050)	AE
D109	91Q322120A9	MW Overload (20A90)	AB
		THERMISTOR	
TH1	91Q17MT0060	Temperature Compensation	AB
		COILS	
L101	91Q341Z1267	FM Antenna	AB
L102	91Q3414Z997	FM Antenna	AC
L103	91Q341Z1267	FM Antenna	AB
L104	91Q341Z1164	FM RF	AC
L105	91Q3414Z997	FM IF Trap	AC
L106	91Q341Z1165	FM Oscillator	AB
L107A,B	91Q34410012	MW/LW Bar Antenna	–
L108	91Q34360365	MW Oscillator	–
L109	91Q34410013	LW Oscillator	–
L1	91Q3420047K	Noise Choke, 47μH	–
		TRANSFORMERS	
T1	91Q33326030	Audio Driver	–
T2	91Q33405049	Audio Output	AL
T3	91Q33272993	Power (GF-1704H)	–
T101	91Q34270157	1st FM IF	AF
T102	91Q34270157	2nd FM IF	AF
T103	91Q34270157	3rd FM IF	AF
T104	91Q34270183	FM Discriminator	AF
T105	91Q34270182	FM Discriminator	AF
T106	91Q34170468	1st AM IF	AE
T107	91Q34170469	2nd AM IF	AE
T108	91Q34170470	3rd AM IF	AE
T3	RTRNP0483AFZZ	Power (GF-1704E)	–
		CONTROLS	
VR1	91Q3954C102	Volume Control, 10K (D) ohm	AF
VR2	91Q3964A098	Tone Control, 10K (D) ohm, with Monitor Switch (SW2)	–
		ELECTROLYTIC CAPACITORS	
C1	91Q24511339	3.3MFD, 6.3V	AB
C2	91Q24511479	4.7MFD, 6.3V	AB
C4	91Q24511101	100MFD, 6.3V	AC
C5	91Q24511100	10MFD, 6.3V	AB
C6	91Q24511109	1MFD, 6.3V	AB
C8	91Q24511222	2200MFD, 10V	AF
C9	91Q24511479	.47MFD, 6.3V	AB
C10	91Q24511109	1MFD, 6.3V	AB
C12	91Q24511471	470MFD, 6.3V	AD
C13	91Q24511471	470MFD, 6.3V	AD
C14	91Q24511471	470MFD, 6.3V	AD
C17	91Q24511221	220MFD, 6.3V	AC
C18	91Q25211104	.1MFD, 6.3V, +10 –10%, Aluminum	AC
C23	91Q24511109	1MFD, 6.3V	AB
C25	91Q24511109	1MFD, 6.3V	AB
C26	91Q24511471	470MFD, 10V	AD
C130	91Q24511100	10MFD, 6.3V	AB
C135	91Q25311224	.22MFD, 6.3V, +20 –20%, Aluminum	AD

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
C136	91Q24511471	470MFD, 6.3V	AD
C138	91Q25311104	.1MFD, 6.3V, +20 –20%, Aluminum	AC
C139	91Q24511330	33MFD, 6.3V	AB
		MYLAR CAPACITORS	
C7	91Q22251333	.033MFD, 50V, +10 –10%	AB
C15	91Q22251103	.01MFD, 50V, +10 –10%	AB
C16	91Q22251103	.01MFD, 50V, +10 –10%	AB
C19	91Q22251222	.0022MFD, 50V, +10 –10%	AB
C21	91Q22251222	.0022MFD, 50V, +10 –10%	AB
C31	91Q22251104	.1MFD, 50V, +10 –10%	AB
C129	91Q22351473	.047MFD, 50V, +20 –20%	AC
C134	91Q22351153	.015MFD, 50V, +10 –10%	AB
C137	91Q22351103	.01MFD, 50V, +10 –10%	AB
C142	91Q22351223	.022MFD, 50V, +10 –10%	AB
C143	91Q22351223	.022MFD, 50V, +10 –10%	AB
C144	91Q22351223	.022MFD, 50V, +10 –10%	AB
C146	91Q22351223	.022MFD, 50V, +10 –10%	AB
C150	91Q22351103	.01MFD, 50V, +10 –10%	AB
C154	91Q22351473	.047MFD, 50V, +10 –10%	AC
		STYROL CAPACITORS	
C148	91Q20151270	270PF, 50V, +5 –5%	AB
C151	91Q20151220	220PF, 50V, +5 –5%	AB
		VARIABLE CAPACITORS AND TRIMMERS	
VC1, VC2, VC3, VC4,		Variable Capacitor, Tuning with Trimmers	
TC1, TC2, TC3, TC5	91Q3901AF26	TC1: FM RF Trimmer, TC2: FM Oscillator Trimmer, TC5: MW Oscillator Trimmer, TC3: MW Antenna Trimmer,	–
TC4	91Q39011T16	Trimmer Capacitor, LW Antenna	–
TC6	91Q39011T16	Trimmer Capacitor, LW Oscillator	–
		CERAMIC CAPACITORS	
C3	91Q27251201	200PF (YB), 50V, +10 –10%	AB
C11	91Q27251201	200PF (YB), 50V, +10 –10%	AB
C22	91Q21551301	300PF, 50V, +20 –20%	AB
C24	91Q27251201	200PF (YB), 50V, +10 –10%	AB
C27, C28, C29, C30	91Q21551103	.01MFD, 50V, +20 –20%	AA
C32	91Q21551101	100PF, 50V, +20 –20%	AA
C101	91Q21251100	10PF, 50V, +10 –10%	AA
C102	91Q27951309	3PF, 50V, +.5PF –.5PF	AA
C103	91Q21251100	10PF, 50V, +10 –10%	AA
C104	91Q21251200	20PF, 50V, +10 –10%	AA
C105	91Q27551222	.0022MFD (YB), 50V	AB
C106	91Q21551223	.022MFD, 50V, +80 –20%	AB
C107	91Q27951509	5PF, 50V, +.5PF –.5PF	AB
C108	91Q21151200	20PF, 50V, +5 –5%	AA
C109	91Q21551103	.01MFD, 50V, +80 –20%	AA
C110	91Q21251200	20PF, 50V, +10 –10%	AA
C111	91Q21251331	330PF, 50V, +10 –10%	AB
C112	91Q27551222	.0022MFD (YB), 50V	AB
C113	91Q27951309	3PF (CH), 50V, +.25PF –.25PF	AA
C114	91Q27951509	5PF (TH), 50V, +.5PF –.5PF	AB
C115	91Q27151180	18PF (CH), 50V, +5 –5%	AB
C116	91Q21951059	.5PF, 50V, +.25PF, –.25PF	AA
C117	91Q21551223	.022MFD, 50V, +80 –20%	AB
C118	91Q21251331	330PF, 50V, +10 –10%	AB
C119	91Q21551222	.0022MFD, 50V, +80 –20%	AB
C120	91Q21551103	.01MFD, 50V, +80 –20%	AA
C121	91Q21551223	.022MFD, 50V, +80 –20%	AB
C122	91Q27951309	3PF, 50V, +.5PF –.5PF	AB
C123	91Q21251331	330PF, 50V, +10 –10%	AB
C124	91Q21551223	.022MFD, 50V, +80 –20%	AB
C125	91Q21551103	.01MFD, 50V, +80 –20%	AA
C126	91Q21951109	1PF, 50V, +.25PF –.25PF	AB
C127	91Q21551103	.01MFD, 50V, +80 –20%	AA
C128	91Q21551223	.022MFD, 50V, +80 –20%	AB
C131	91Q21551102	.001MFD, 50V, +80 –20%	AA
C132	91Q21551102	.001MFD, 50V, +80 –20%	AA
C133	91Q21551102	.001MFD, 50V, +80 –20%	AA
C140	91Q27951509	5PF, 50V, +.5PF –.5PF	AA
C141	91Q21251560	56PF, 50V, +10 –10%	AA
C145	91Q21551222	.0022MFD, 50V, +80 –20%	AB
C147	91Q21551473	.047MFD, 50V, +80 –20%	AB
C149	91Q21951509	5PF (CH), 50V, +.25PF –.25PF	AA
C152	91Q27251151	150PF (CH), 50V, +10 –10%	AD
C153	91Q27151150	15PF (CH), 50V, +5 –5%	AB
C155	VCKSPU2GL221M	220PF, AC400V, +20 –20% (GF-1704H)	AD
C156, C157	91Q27951309	3PF (CH), 50V, +.25PF –.25PF	AA
C158	91Q21551104	.1MFD, 50V, +80 –20%	–
		RESISTORS (Unless otherwise specified resistors are 1/4W, ±10%, Carbon Type.)	
R1	91Q11221222	2.2K ohm	AA
R2	91Q11221183	18K ohm	AA
R3	91Q11221682	6.8K ohm	AA
R4	91Q11221181	180 ohm	AA
R5	91Q11221104	100K ohm	AA
R6	91Q11221332	3.3K ohm	AA
R7	91Q11221152	1.5K ohm	AA
R8	91Q11221683	68K ohm	AA
R9	91Q11221822	8.2K ohm	AA
R10	91Q11221123	12K ohm	AA
R11	91Q11221821	820 ohm	AA
R12	91Q11221472	4.7K ohm	AA
R13	91Q11221820	82 ohm	AA
R14	91Q11221683	68K ohm	AA
R15	91Q11221151	150 ohm	AA
R16	91Q11221822	8.2K ohm	AA
R17	91Q11221331	330 ohm	AA
R18	91Q11221180	18 ohm	AA
R19	91Q11222560	56 ohm	AA
R20	91Q11222680	68 ohm	AA
R21	91Q11221152	1.5K ohm	AA
R22	91Q11232059	0.5 ohm, 1/2W, +10 –10%, Carbon	AA
R23	91Q11221273	27K ohm	AA

REF. NO.	PART NO.	DESCRIPTION	CODE
R24	91Q11222561	560 ohm	AA
R25	91Q11221820	82 ohm	AA
R26	91Q11221271	270 ohm	AA
R27	91Q11221472	4.7K ohm	AA
R28	91Q11221471	470 ohm	AA
R29	91Q11232829	8.2 ohm, 1/2W, +10 −10%, Carbon	AA
R30	91Q11222229	2.2 ohm	AA
R31	91Q11221823	82K ohm	AA
R32	91Q11222222	2.2K ohm	AA
R33	91Q11222273	27K ohm	AA
R34	91Q11222683	68K ohm	AA
R35	91Q11222332	3.3K ohm	AA
R36	91Q11221222	2.2K ohm	AA
R37	91Q11222223	22K ohm	AA
R38	91Q11221563	56K ohm	AA
R40	91Q11222331	330 ohm	AA
R41	91Q11221562	5.6K ohm	AA
R42	91Q11221224	220K ohm	AA
R43	91Q11221472	4.7K ohm	AA
R44	91Q11221101	100 ohm	AA
R45	91Q11221101	100 ohm	AA
R46	91Q11221562	5.6K ohm	AA
R47	91Q11221122	1.2K ohm	AA
R48	91Q11221562	5.6K ohm	AA
R49	91Q11221562	5.6K ohm	AA
R50	91Q11221221	220 ohm	AA
R51	91Q11221222	2.2K ohm	AA
R101	91Q11221102	1K ohm	AA
R102	91Q11221472	4.7K ohm	AA
R103	91Q11221102	1K ohm	AA
R104	91Q11221472	4.7K ohm	AA
R105	91Q11221390	39 ohm	AA
R106	91Q11221221	220 ohm	AA
R107	91Q11221683	68K ohm	AA
R108	91Q11221101	100 ohm	AA
R109	91Q11221471	470 ohm	AA
R110	91Q11221472	4.7K ohm	AA
R111	91Q11221391	390 ohm	AA
R112	91Q11221101	100 ohm	AA
R113	91Q11222102	1K ohm	AA
R114	91Q11221562	5.6K ohm	AA
R115	91Q11221472	4.7K ohm	AA
R116	91Q11221391	390 ohm	AA
R117	91Q11221181	180 ohm	AA
R118	91Q11221224	2.2 Meg ohm	AA
R119	91Q11221821	820 ohm	AA
R120	91Q11221821	820 ohm	AA
R121	91Q11222562	5.6K ohm	AA
R122	91Q11221562	5.6K ohm	AA
R123	91Q11221102	1K ohm	AA
R124	91Q11221682	6.8K ohm	AA
R125	91Q11221270	27 ohm	AA
R126	91Q11221102	1K ohm	AA
R127	91Q11221472	4.7K ohm	AA
R128	91Q11221472	4.7K ohm	AA
R129	91Q11221471	470 ohm	AA
R130	91Q11221102	1K ohm	AA
R131	91Q11221151	150 ohm	AA
R132	91Q11221473	47K ohm	AA
R133	91Q11221153	15K ohm	AA
R134	91Q11221151	150 ohm	AA
R135	91Q11221271	270 ohm	AA
R136	91Q11221391	390 ohm	AA
R137	91Q11221222	2.2K ohm	AA
R138	91Q11221331	330 ohm	AA
R139	91Q11221683	68K ohm	AA
R140	91Q11221153	15K ohm	AA
R141	91Q11221332	3.3K ohm	AA

PICTORIAL PARTS

REF. NO.	PART NO.	DESCRIPTION	CODE
1	91Q50251002	Cabinet, Front	—
2	91Q60050003	Stay, Motor Bracket Retaining	AC
3	91Q44049005	Plate Spring, Cassette Holder Opening	AB
4	91Q71049007	Spring, Cassette Holder Plate Spring	AA
5	91Q41050008	Bracket, Jack Plate	AC
6	HINDM1133AFSB	Indication Metal, SHARP	AA
7	91Q93551002	Decoration Sheet, Cassette Compartment	AA
8	91Q94050001	Rubber, 17 x 15 x 10mm	—
9	91Q43751028	Indication Metal, RADIO CASSETTE RECORDER AUTO STOP	—
10	91Q54351001	Window, Tuning Dial	—
11	91Q3915M35B	Built-in Microphone	—
12	91Q43751026	Badge, GF-1704	—
13	91Q92151004	Felt, Speaker	—
14	91Q41051003	Bracket, Band Selector	AC
15	91Q41051004	Lever, Band Selector	AB
16	91Q51251001	Cassette Holder	—
17	91Q54451001	Cassette Holder Window	—
18	91Q44049004	Plate Spring, Cassette Holding	AB
19	91Q50151002	Frame, Speaker Retaining	—
20	91Q91049001	Dial Cord Pulley	AA
21	91Q50051001	Knob, Band Selector	AB
22	91Q43751027	Plate, Dial Scale	—
23	91Q92150003	Felt, Mode Switch and Band Selector	AA
24	91Q52051002	Pointer	—
25	91Q91250001	Dial Cord Drive Shaft	AE
26	91Q30051021	P.W. Board, Record/Battery Condition Indicator	—
27	91Q41050007	Bracket, Tuner P.W. Board	AC
28	91Q30051014	P.W. Board, Mode Switch	—
29	JKNBM0160AFSA	Knob, Mode Switch	AB
30	91Q60051001	Shaft, Band Selector Knob	AC
31	91Q60051002	Shaft, Band Selector Lever	AA
32	91Q60051003	Guide Shaft, Band Selector Lever	AA
33	91Q50150002	Drum, Dial Cord	AD
34	91Q71049006	Spring, Dial Cord	AA
35	91Q30051022	P.W. Board, Tuner	—
36	91Q91349001	Holder, AM Bar Antenna	AC
37	91Q60051004	Guide Shaft, Band Selector Lever	AA
38	91Q70251002	Spring, Band Selector Knob	AA
39	91Q41049005	Bracket, Mechanism Chassis	AB
40	91Q99051001	Lever, Band Selector Switch	AB
41	91QGF-1704H001	Ball, 3.17ϕ, Band Selector Knob	AA
42	91Q43751031	Indication Metal, Model Spec. (GF-1704H)	—
	91Q43751038	Indication Metal, Model Spec. (GF-1704E)	—
43	91Q40149003	Bracket, Mechanism Chassis	—
44	91Q51149027	Lever, Cassette Holder Lock	AB
45	91Q93351001	Fiber, Battery Compartment	—
46	91Q41049008	Bracket, Mechanism Chassis	AB
47	91Q91449001	Dial Cord	—
48	91Q30051023	P.W. Board, Audio	—
49	91Q51151009	Cabinet, Back	—
50	91Q50150001	Knob, Tuning	AC
51	91Q91649001	Telescopic Rod Aerial	AR
52	91Q50050001	Holder, Telescopic Rod Aerial	AB
53	91Q51050001	Retainer, Handle	AB
54	JKNBN0227AFSA	Knob, Monitor Switch/Tone and Volume Control	AC
55	91Q46750001	Handle, Carrying	AQ
56	91Q60050006	Shaft, Handle	AB
57	91Q93350001	Stopper, Handle Shaft	AA
58	91Q44050002	Plate Spring, Handle	AB
59	91Q70250001	Battery Spring, Negative Side	AB
60	91Q70250002	Battery Spring, Negative Side	AB
61	91Q42249002	Battery Terminal, Positive Side	AB
62	91Q36910819	Holder, Fuse (630mAT)	—
63	91Q45850001	Lug Terminal, Telescopic Rod Aerial	AA
64	91Q93350002	Fiber, Battery Compartment Hole Masking	AB
65	91Q92050002	Cushion, Battery Compartment Lid	AB
66	91Q51150007	Lid, Battery Compartment	AE
67	91Q95050001	Ribbon, Battery Compartment	AC
68	QTANB9072AFFN	Battery Terminal, Positive Side	AC
69	91QGF-1704H002	Wire Holder, Fiber	—
70	92V15V-H002	Spacer, Eject Lever	—
71	92V15VS-A004	Mechanism Chassis	AQ
72	92V965S-A001	Sub-Chassis	AF
73	92V965S-G004	Block, Head Mounting	AC
74	92V16V-S002	Spring, Sub-chassis Returning	AA
75	91Q37310001	Head, Record/Playback	—
76	91Q3741ME32	Head, Erase	—
77	92V160-S006	Spring, Head Azimuth	AA
78	92V520-E001	Pinch Roller Assembly	AE
79	92V16V-S003	Spring, Pinch Roller Lever	AA
80	92V965S-G005	Contact, Tape	AA
81	92V965S-P018	Lever, Tape Contact	AC
82	92V965-S003	Spring, Tape Contact Lever	AA
83	92V965-P023	Wire Holder	—
84	92V15V-P008	Lever, Eject Protection	AB
85	92V15V-P006	Lever, Eject	—
86	92V15V-S001	Spring, Eject Lever	—
87	92V15VS-A003	Push Button Block Assembly	AM
88	92V15V-H003	Spacer, Lock Lever	—
89	92V15V-S002	Spring, Lock Lever	—
90	92V965S-A002	Lever, Fast Forward	—
91	92V16V-S004	Spring, Brake Operation Lever	—
92	92V965S-P020	Lever, Rewind	AB
93	92V1015-G001	Fast Forward/Rewind Roller Lever Assembly	—
94	92V965S-P019	Lever, Brake Operation	AC
95	92V15VD-P015	Lever, Brake	AB
96	92V1015-H004	Rod, Record Safety	AA
97	92V520-P012	Lever, Record Safety	AA
98	92V111-H021	Spacer, Record Safety Lever	—
99	92V520-S005	Spring, Record Safety Lever	AA
101	92V965-H004	Flywheel with Stop Pin	AK
102	92V15V-P013	Bracket, Flywheel	—
103	92V965-G009	Screw, Flywheel Thrust	AB
104	92V965-P007	Washer, Capstan Oil Cut	—
105	92V1033-H001	Turntable, Take-up and Supply	AD
106	92V520-S001	Spring, Supply Turntable	AA
107	92V960-G003	Slip Roller Lever Assembly	AH
108	92V111-S011	Spring, Slip Roller Lever	AA
109	92V965-P005	Bracket, Motor	AD
110	91Q3941E6NR	Motor	—
111	92V965SH016	Pulley, Motor	—
112	92V965-G001	Cushion Rubber, Motor	AA
113	92V965-H018	Screw, Motor Retaining	AA
114	92V965S-G011	Cushion, Motor Bracket	AA
115	92V960-G001	Belt, Drive	AD
116	92V965-P010	Plate Spring, Cassette	—
117	92V15V-P005	Plate Spring, Record/Playback Switch	AB
118	92V15VS-P009	Lever, Record/Playback Switch	—
119	92V965S-A006	Lever, Flywheel Contact	AD
124	91Q41050011	Shield	AD
128	91Q62050001	Pulley, Counter Belt	—
129	91QMP390210	Digital Tape Counter	—
130	91Q41051007	Bracket, Tape Counter	—
131	92V15V-G002	Belt, Tape Counter	AC
134	92V1015-S003	Spring, Fast Forward/Rewind Idler Lever	—
135	91Q51149014	Knob, Function Key, Black	AB
136	91Q51149023	Knob, Record Key	AB
137	91Q94050002	Rubber, 20 x 13 x 8mm	AB
139	91Q30051024	P.W. Board, Jack	—

MISCELLANEOUS

REF. NO.	PART NO.	DESCRIPTION	CODE
SW1 (A–E)	91Q3542106B	Switch, Record/Playback	AG
SW2	Not Available	Switch, Monitor (Part of VR2)	—
SW3 (A–D)	91Q35224201 or 91Q35222217	Switch, Mode	—
SW4	Not Available	Switch, a.c./Batteries (Part of SO1)	—
SW5	92V111-E014	Switch, Motor	AE
SW6	91Q35413726	Switch, Voltage Selector (GF-1704H)	—
SW7 (A–J)	91Q3519A103	Switch, Band Selector	—
SO1, SO2,		Socket, Mains Power Supply Socket, Record/Playback	
J1, J2, J3	91Q3677M193	Jack, Microphone Jack, Remote Control Jack, External Speaker	—
SP1	91Q3931001F	Speaker	—
F1	91Q3960630T	Fuse, 630mAT, 5ϕ x 20mm	—
	QACCK0050AFZZ	Mains Supply Cord (GF-1704H)	AM
	RPHOE0007AGZZ	Earphone	AE
	RTPEK0033AGZZ	Cassette Tape	AM
	QACCB0003AG0V	Mains Supply Cord (GF-1704E)	AL
SW8	Not Available	Switch, Record/Playback Socket (Part of SO2)	—
SW9	Not Available	Switch, Microphone Jack (Part of J1)	—

PARTS LIST